

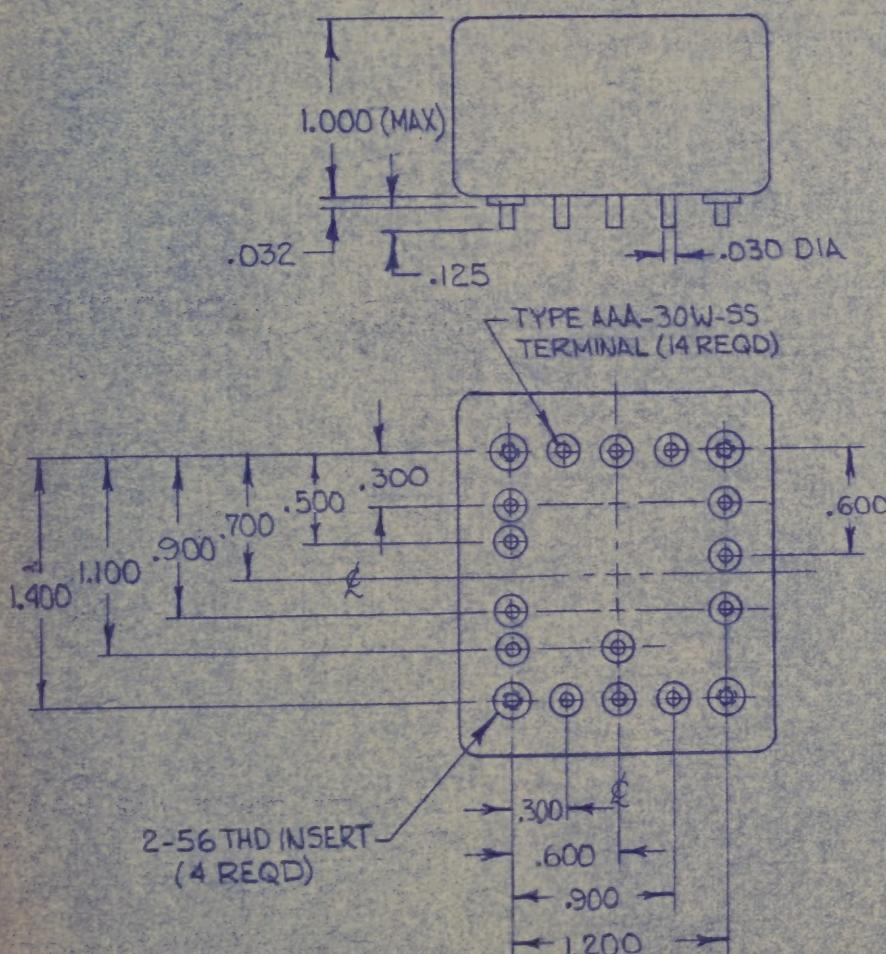
**MODE 1 SEQUENCE OF OPERATION:** With the occurrence of the first keying pulse the relay output will switch on for  $15.5 \pm 1$  sec. On the leading edge of the fourth keying pulse, the 512.5 ms timer will start. At the end of the 512.5 ms period, the 1 ms and 85 us output pulses will switch on for their respective pulse widths. After 21+1 keying pulses the sequence will repeat.

**MODE 2 SEQUENCE OF OPERATION:** With the occurrence of the first keying pulse after the reception of a single cycle input pulse, the sequence of operation is identical with MODE 1. After the completion of the sequence, an additional single cycle input pulse must be received for each additional sequence.

**MODE 3 SEQUENCE OF OPERATION:** With the occurrence of the first keying pulse  $10.5 \pm 1$  sec. after initiating MODE 3 operation, the 512.5 ms timer will start. At the end of the 512.5 ms period, the 1 ms and 85 us output pulses will switch on for their respective pulse widths. If a computer reset pulse is not received in 11+1 keying pulses, the sequence will repeat. If a computer reset pulse is received any time prior to the end of the 512.5 ms period with respect to any of the 10 intermediate keying pulses the 1 ms and 85 us output pulses will switch on for their respective pulse widths and the sequence will repeat.

#### PIN CONNECTIONS:

- 1 Relay Drive Output
- 2 Mode 1 Input
- 3 Mode 2 Input
- 4 Mode 3 Input
- 5 Keying Pulse Input
- 6 +25 VDC Power Input
- 7 Comp. Reset Input
- 8 Common Return
- 9 512 ms Adjust Res.
- 10 Single Cycle Input
- 11 1 ms Pulse Output
- 12 85 us Pulse Output
- 13 -12 VDC Power Input



3 FOR WIRING DIAGRAM: 100269  
2 FOR COMPONENT ASSY: 100268

1 FOR SCHEMATIC: 100267

NOTES:

#### 1. INPUT SIGNALS:

Mode 1, 2 & 3:  $+27.5 \pm 1$  VDC, 50 ma max.; off  $0 \pm 0.25$  VDC.  
Single cycle pulse:  $+150 \pm 15$  VDC, 5 ms max., 0.1 to 1.0 sec.; off  $0 \pm 0.5$  VDC.  
Computer reset pulse:  $-12 \pm 2$  VDC, 2 ms max., 2.4 to 10 ms; off  $-0.25 \pm 0.25$  VDC.  
Keying pulse:  $+150 \pm 15$  VDC, 3 ms max., 18 to 25 ms; off  $0 \pm 1$  VDC. 1.0 sec. repetition rate.

#### 2. OUTPUT SIGNALS:

Time pulse:  $+2.5 \pm 0.5$  VDC, 1K max. imped.,  $1.0 \pm 0.12$  ms; off  $-12 \pm 0.5$  VDC, 3K max. imped.  
1.0 us max. rise and fall time.  
85 us pulse:  $-12 \pm 0.5$  VDC, 400 ohm max.  
Taped., 85+15 us; off  $0 \pm 0.5$  VDC. 1.0 us max. rise and fall time.  
Relay drive: Switch to ground, 60 ma max.  
Toad, 0.8 VDC max. switch drop; off 0.25 ma max. leakage at 28 VDC.

3. 512.5 ms TIMER: 512.5 ms ~~ADJUST~~ ~~PERIOD~~: externally adjustable to 512.5 ms  $\pm 0.5$  ms repeatability.

4. INPUT POWER:  $+25$  VDC  $\pm 2\%$ , 100 ma max.;  $-12$  VDC  $\pm 2\%$ , 50 ma max.

5. TEMPERATURE RANGE: Operating,  $+15^\circ C$  to  $45^\circ C$ ; non-operating,  $-10^\circ C$  to  $+75^\circ C$ .

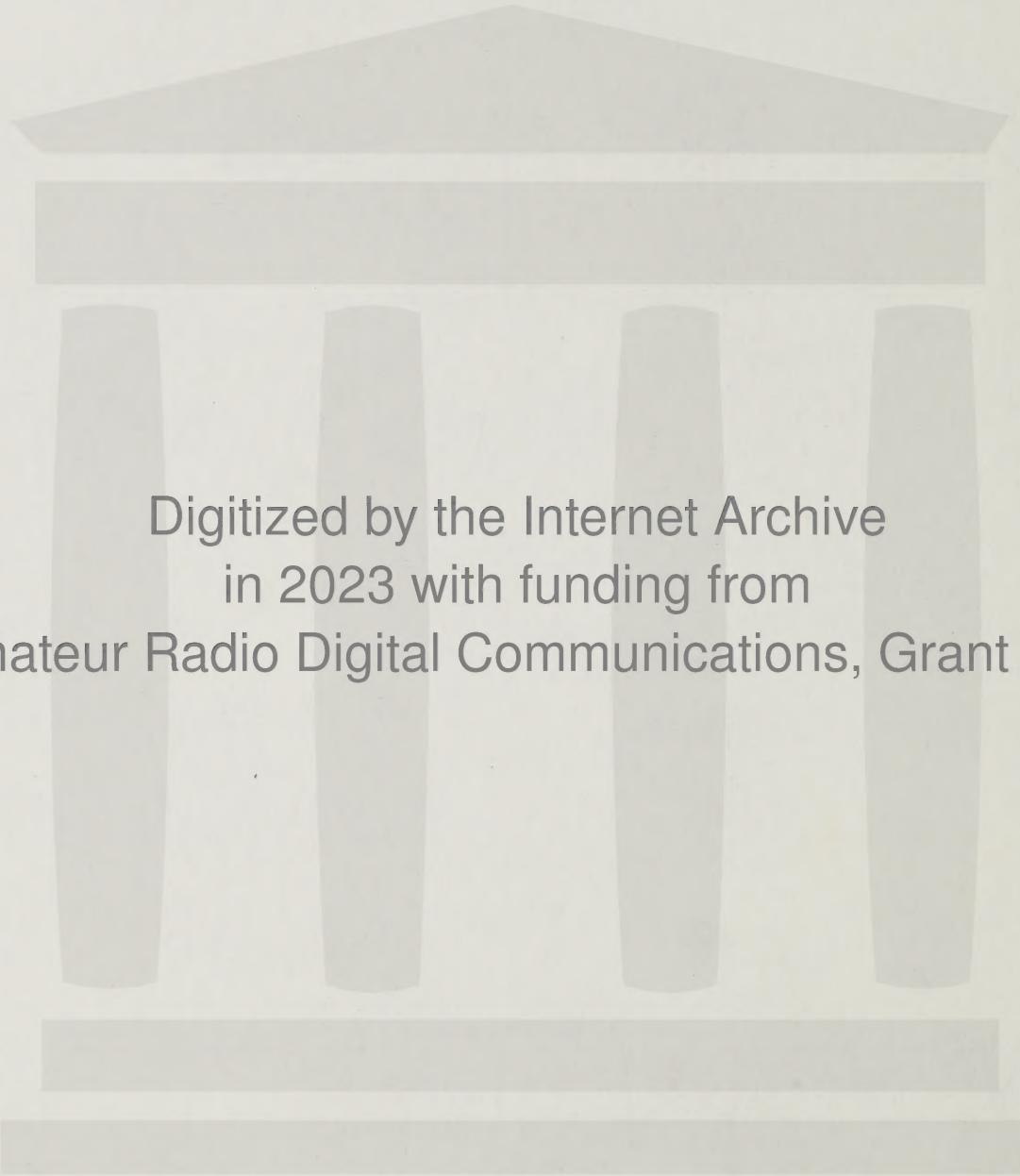
6. SHOCK AND VIBRATION: ~~100 G's for 11 ms~~ 50 G's 1.0 to 2000 cps.

7. VOLTAGE BREAKDOWN AND INSULATION RESISTANCE: 500 VRMS, all pins to case; 500 megohms, each pin to case.

8. WEIGHT AND FINISH: 5 oz. max.; nickel plate.

REF DES	QTY	PART NO.	DESCRIPTION
DR Carole Miller	4/8/64		
CHKd. -ducal	4/10/64		
DSGN			
PROJ			
REL			
<i>[Signature]</i>			
APPROVED			
MACH			
SURF	✓		
CODE IDENT NO.	SIZE	REV	
13979	B	100266	
DO NOT SCALE DRAWING	SCALE 1/1		SHEET 1 OF 1

NETWORK TIMING UNIT

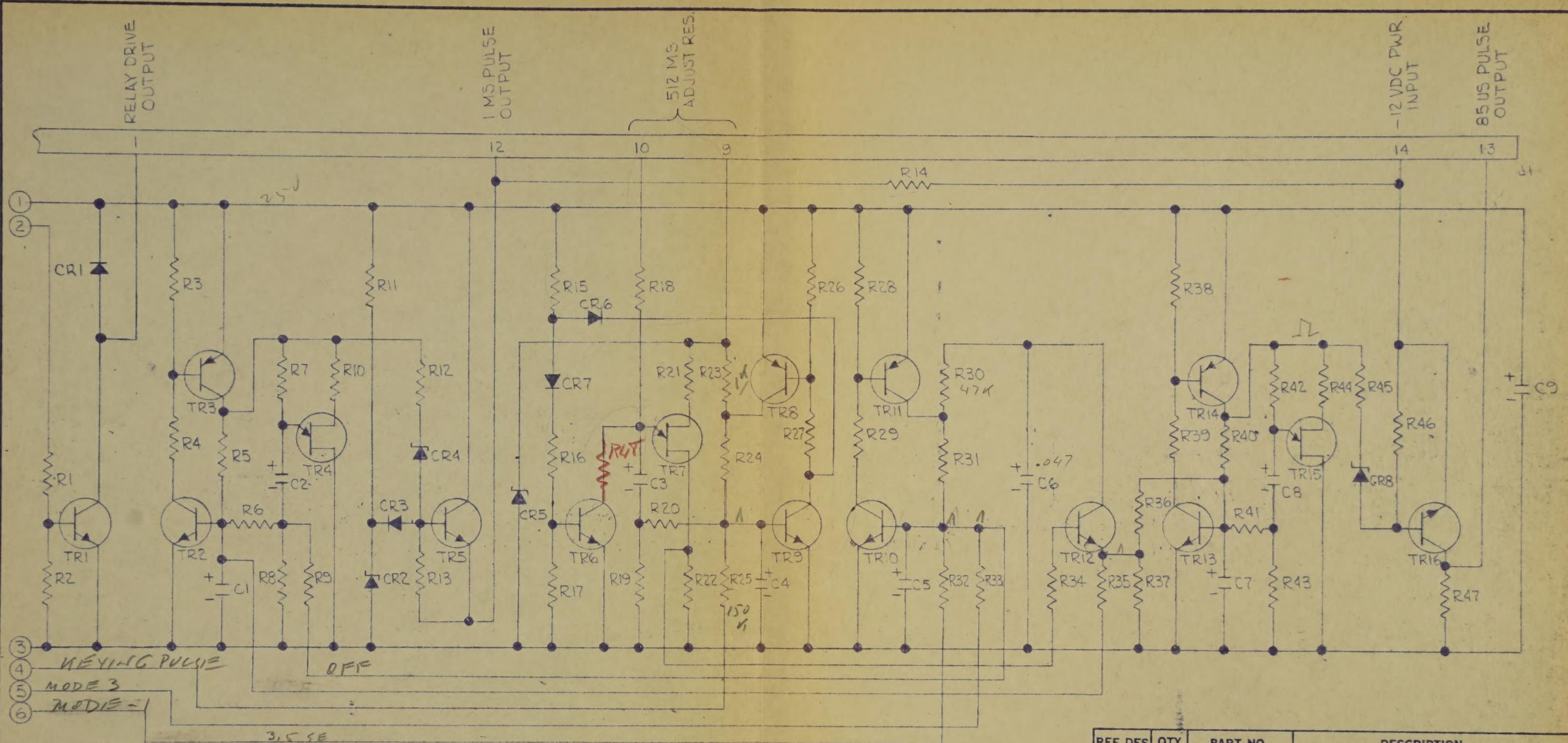


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Amateur Radio Digital Communications, Grant 151

<https://archive.org/details/100266networktim00unse>







REF DES	QTY	PART NO.	DESCRIPTION
DR Castleberry	52264		
CHK Lucas	6/4/68		
		Parko	ELECTRONICS COMPANY SANTA ANA, CALIF.
			SCHEMATIC- NETWORK TIMING UNIT
		CODE IDENT NO.	SIZE
13979	B	100267	REV
			A
MACH		DO NOT SCALE DRAWING	SHEET 3 OF 3
SURF		SCALE -	

1. PREFIX ALL REF DES WITH A2; EXAMPLE A2TR1  
NOTES:

DIMENSIONS ARE  
IN INCHES AND  
AFTER PLATING

TOLERANCES  
(UNLESS OTHERWISE  
SPECIFIED)

.X ±.1  
.XX ±.03  
.XXX ±.010  
ANGLES ±0.5°

APPROVED  
MACH  
SURF

DR Castleberry 52264

CHK Lucas 6/4/68

DSGN

PROJ

REL

APPROVED

APPROVED

DO NOT SCALE DRAWING

Q-A4 JUL 16 1968

A4 7-15-68

# Parko

ELECTRONICS COMPANY, INC.

## ENGINEERING DRAWING CHANGE RECORD

TOP DRAWING NO. 100266

SHEET OF

DRAWING NO.	REV	CHG	DESCRIPTION OF CHANGE	SIG/DATE
100266				
100267541 SH1	A	5	ADDED AL-C9 ADDED 50001 HOLE RT,	9-15-67
SH2	A	4	ADDED AL-C9	
SH3	A	4	RELOCATED CRT: WAS; CRT1 TO TRI-C + J1-1 * CRT(+/-) TO J1-4 (common)	7-15-69.
100268 SH1	A	4	ADDED AL-C9 TO HOLE 69	9-15-67
SH2	A	4	REVERSED POLARITY OF CRT WAS: (3) (+) (1) (-)	7-15-69
100269 SH 1 SH 1	NC	1	ADDED AL-C9 TO AL-TB1 & AL-TB2	9-15-67
	NC	2	REVISED WIRING TO INCORPORATE ABOVE CHG	7-15-69

TOP

LIMITS

B/M  
f  
SAW  
(3 sheets)

COMP.  
PST.  
(2 sheets)

WIRING  
(2 sheets)



# Parko

ELECTRONICS COMPANY, INC.

## ENGINEERING DRAWING CHANGE RECORD

TOP DRAWING NO. 100266

SHEET OF

DRAWING NO.	REV	CHG	DESCRIPTION OF CHANGE	SIG/DATE
100266				
1002675H1	A	5	ADDED AI-C9 ADDED 80001 INSERT,	9-15-67
SH2	A	4	ADDED AI-C9	
SH3	A	4	RELOCATED CRT: WAS; CRT(+) TO TRI-C + J1-1 & CRT(+) TO J1-4 (common)	7-15-69.
100268 SH1	A	4	ADDED AI-C9 TO HOLE 69	9-15-67
SH2	A	4	REVERSED POLARITY OF CRT WAS: (3) (+) (2) (-)	7-15-69
100269 SH 1	NC	1	ADDED AI-C9 TO AI-TB1 + AI-TB2	9-15-67
SH 1	NC	2	REVISED WIRING TO INCORPORATE ABOVE CHG	7-15-69





## FUNCTIONAL INSPECTION RECORD

 DATE MAY-7-82 SHOP ORDER NO. 5105

 PARKO PART NUMBER 100266 (NC) CUSTOMER PART NUMBER(Ref. 447-0156-001)

 CUSTOMER & P.O. NUMBER NAVAL SUPPLY CENTER N00621-92-M-KH73

 APPLICABLE SPECIFICATIONS ES 319

Serial Number	Dielectric Strength 500V RMS min.	Insulation Resistance 500 Meg. Min @ 500 VDC	Mode 1 Sequence	Mode 1 Relay Timing	Relay OFF Leakage	Relay Switch Drop
1	0.1V	0.1V	0.1V	15.68 SE	0.0mA	0.11V
2	0.1V	0.1V	0.1V	15.90 SE	0.0mA	0.12V
Serial Number	Repeat Cycle Duration	512.5 ms Timing with 25K	1 ms Pulse Width	1 ms OFF Volts	1 ms ON Volts	85 us Pulse Width
1	21 CYC	508.7ms 59.84	1.01ms	-12.0V	+2.5V	87.9ms
2	21 CYC	516.0ms	1.02ms	-12.0V	+2.5V	86.8ms
Serial Number	85 us OFF Volts	85 us ON Volts	Mode 2 Sequence	Mode 3 Sequence	Mode 3 Sequence Repeat	Mode 3 Computer Reset
1	0.0V	-12.0V	0.1V	0.1V	10.38 SE	0.1V
2	0.0V	-12.0V	0.1V	0.1V	10.25 SE	0.1V



# Parko

ELECTRONICS COMPANY, INC.

## FINAL INSPECTION RECORD

DATE

MAY-12-92

5105

PARKO PART NUMBER

100266 (NC)

CUSTOMER PART NUMBER (Ref. 447-0156-001)

CUSTOMER & P.O. NUMBER

NAVAL SUPPLY CENTER

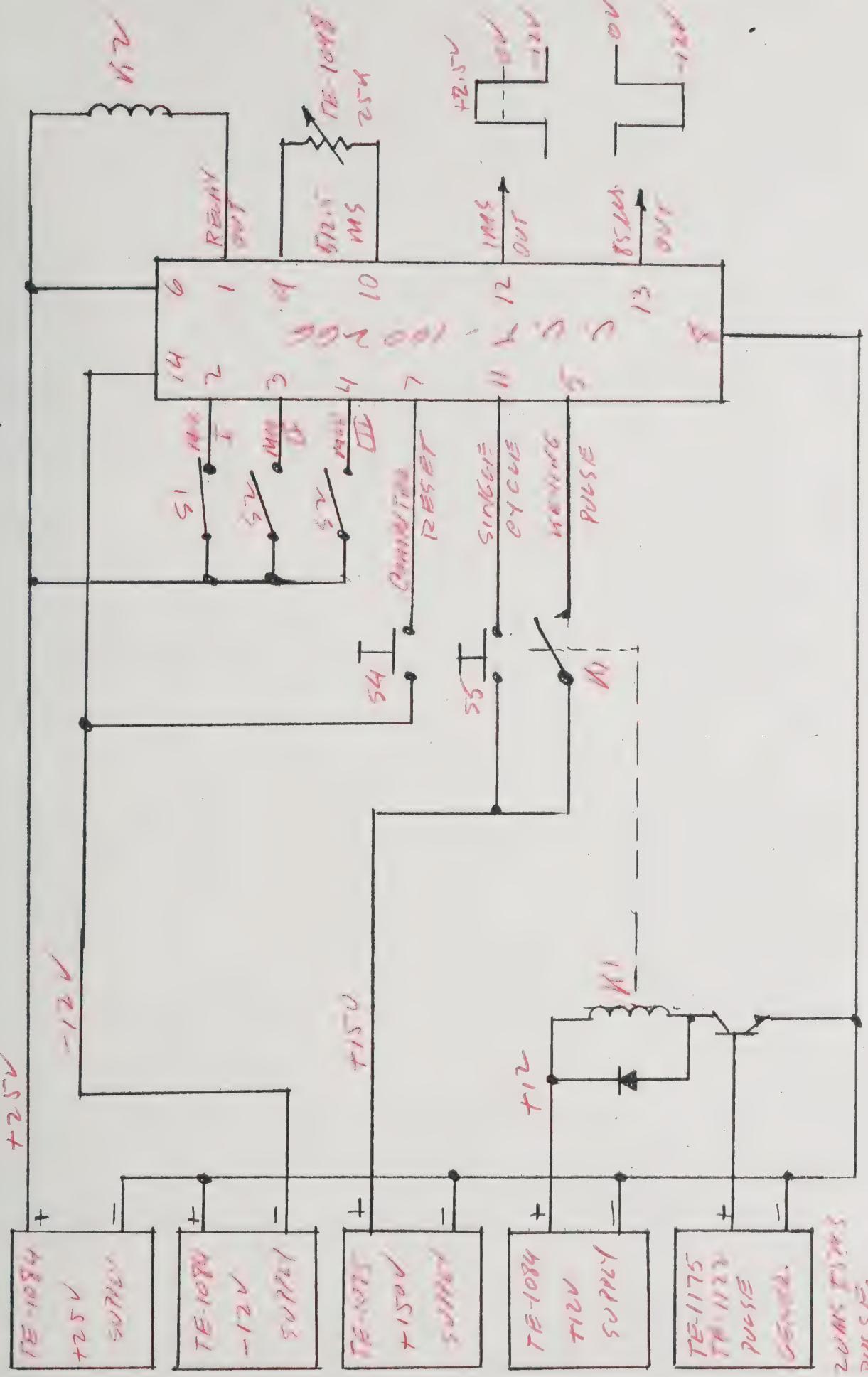
N00612-M-KH73

APPLICABLE SPECIFICATIONS

ES 320

Serial Number	Dielectric Strength 500 V RMS minimum	Insulation Resistance 500 meg. @ 500- VDC	Mode 1 Sequence	Mode 1 Relay Timing	Repeat Cycle Duration	Relay Switch Drop
1	0.6V	0.1M	0.6V	15.56	21CY	0.041V
2	0.6V	0.1M	0.6V	15.62	21CY	0.101V
Serial Number	512.5 ms Timing 0 Reset	512.5 ms Timing 24.7M	1 ms Pulse Width	1 ms OFF Volts	1 ms ON Volts	85 us Pulse Width
1	471.7ms	512.5ms	1.02ms	-12V	+2.50V	87.410s
2	479.1ms	512.5ms	1.02ms	-12V	+2.50	87.610s
Serial Number	85 us OFF Volts	85 us ON Volts	Mode 2 Sequence	Mode 3 Sequence	Mode 3 Sequence Repeat	Mode 3 Computer Reset
1	0V	-12V	0.6V	0.6V	11200- 0.6V	0.1V
2	0V	-12V	0.6V	0.6V	11200- 0.6V	0.1V

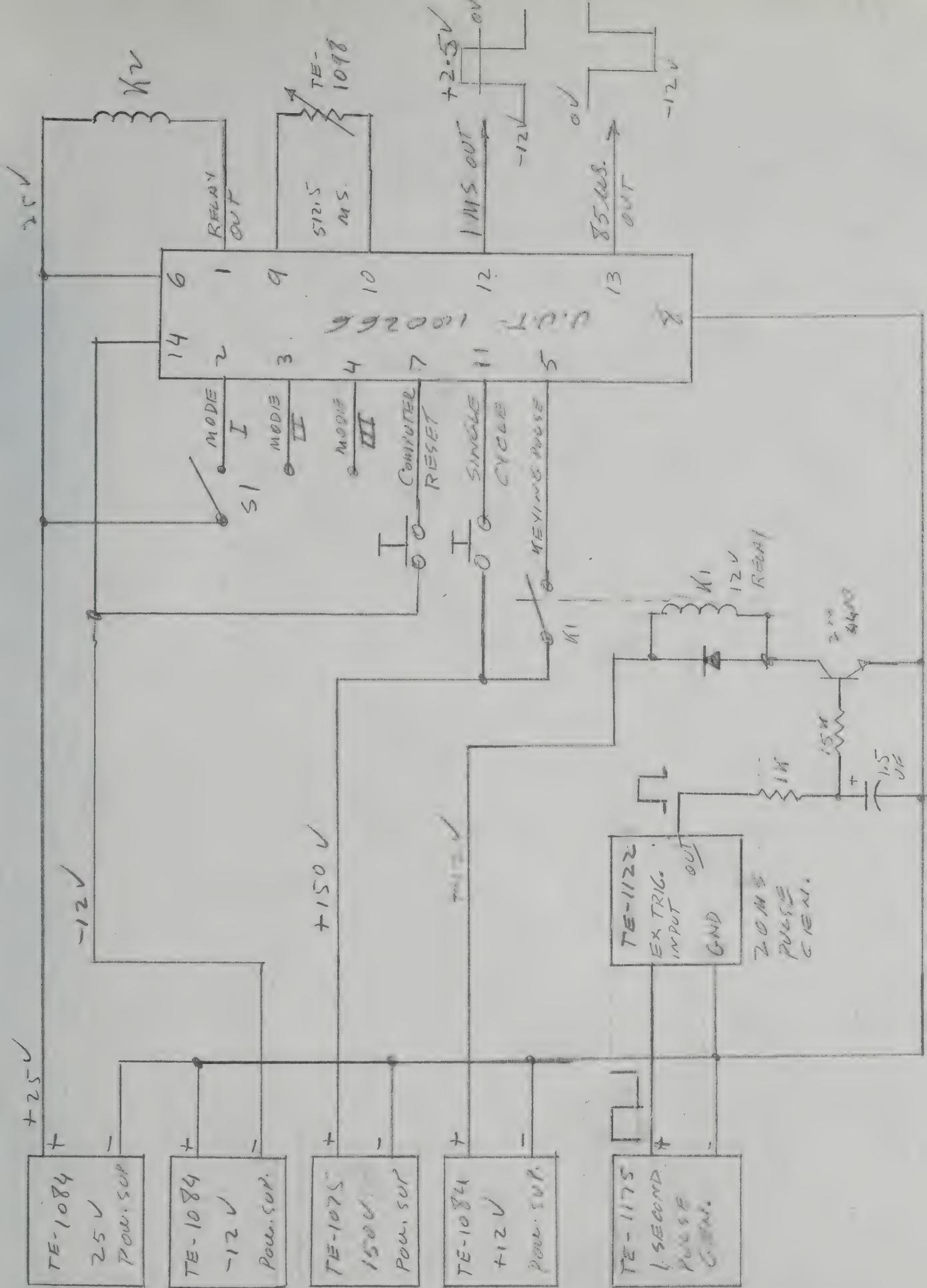




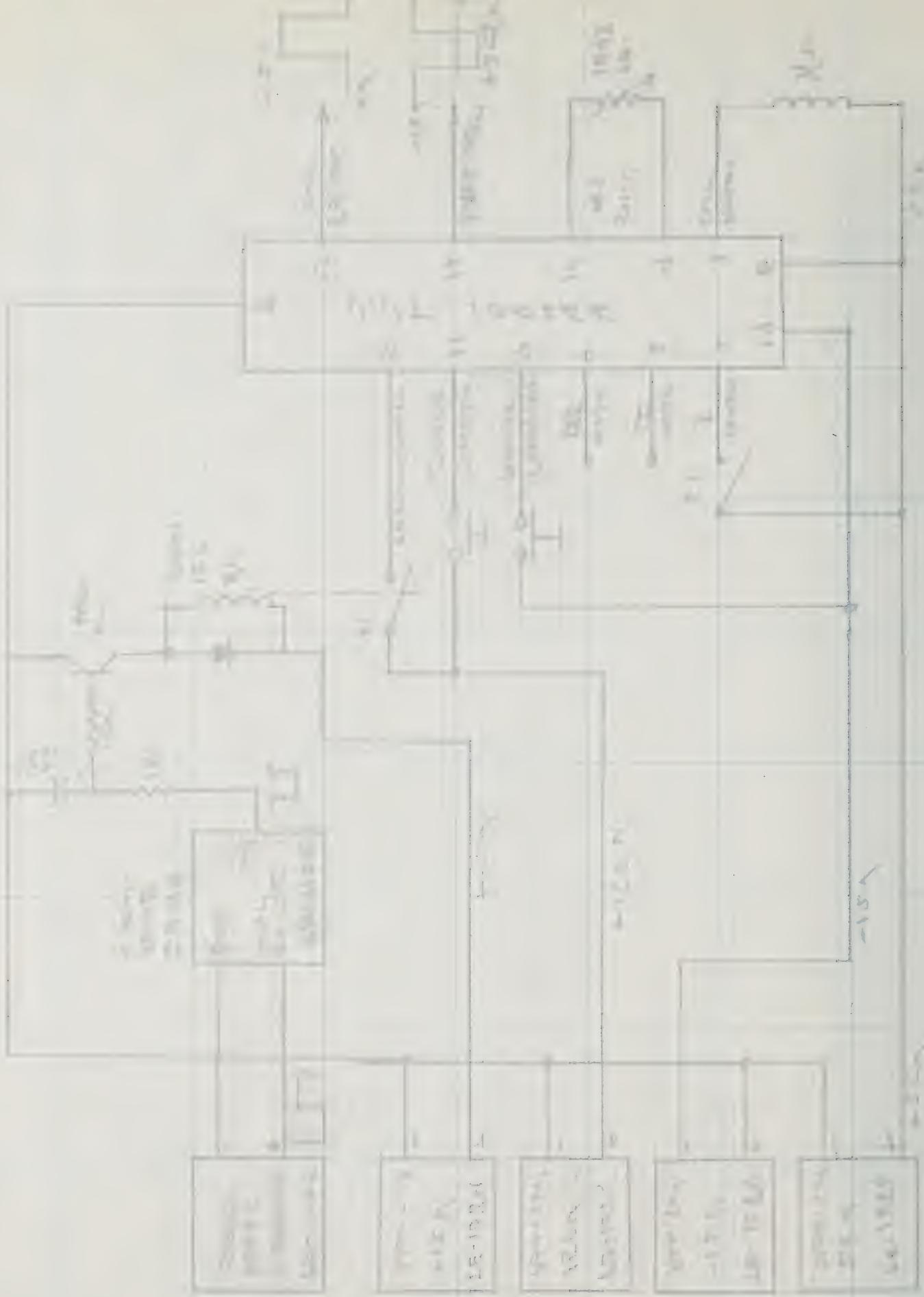
AT PHASED 8  $\frac{1}{16}$   $\Rightarrow 1 - 0266$

2.0V PULSE  
PULSE.  
M1, M2.





APPENDIX T16 - E5-026



## PARTS LIST &amp; TRACEABILITY RECORD

Ref. A1 Des. - Page 1 of 2

DATE \_\_\_\_\_

PARKO P/N 100266 (NC)

CUSTOMER &amp; P.O. NO. \_\_\_\_\_

CUSTOMER P/N (Ref. 447-0156-001)

SHOP ORDER NO. \_\_\_\_\_

REF. DES.	P/N	DESCRIPTION	QTY PER UNIT	TOTAL QTY	INSP	QTY	S/N	THRU	PARKO P.O. NO.	LOT
.015" thick		Teflon Insulation	1							
M/FHU6729-CA-ST 3311146-AAA- 30W-SS Mod.A		Cover Insert	1						Hudson 90001 2-56 inserts (4)	
HU6720-15/16-ST		Can	1						E. V. Roberts/Elec. Industries	
TB1									Hudson	
TB2	M/F169PB59/032	Terminal Board	2						Weatherford/Vector	
#24 AWG		Feed thru wire	1							
#22 AWG		Feed thru wire	4							
R42	RC07	Resistor, 56K	1							
R39	RC07	Resistor, 15K	1							
R33	RC07	Resistor, 5.6K	1							
R14, and 34	26, 30,	Resistor, 39 ohm	4							
R12, and 37	27, 29, 36	Resistor, 470 ohm	5							
R10, and 40	38 RC07	Resistor, 27K	3							
R8	RC07	Resistor, 150 ohm	1							
R7	RC07	Resistor, 100K	1							
R6	RC07	Resistor, 47K	1							
R4, and 11	9 RC07	Resistor, 150K	3							
R2, 43	3, RC07	Resistor, 10K	7							
R1, 41	5, RC07	Resistor, 1.5K	11							



# Parko

ELECTRONICS CO., INC.

SANTA ANA, CALIFORNIA

## PARTS LIST & TRACEABILITY RECORD

Ref. A1 Des. - Page 2 of 2

DATE

PARKO P/N 100266 (NC)

CUSTOMER P/N (Ref. 447-0156-001)

SHOP ORDER NO.

CUSTOMER &amp; P.O. NO.

S/N

THRU

QTY

REF. DES.	P/N	DESCRIPTION	QTY UNIT	TOTAL QTY	INSP	VENDOR/MFR	PARKO P.O. NO.	LOT
C11, 2, C3, 6, C1, 4, TR11	3, 4, 1N483B 150D156X0035A2 100284-2	Diode Capacitor 15/30V Capacitor •15/35V SCR (3F1053)	6 4 1 1			51N645-1 M 38006/08-8503		
TR4, 9, 10 and 12	100283-2	Transistor (2N2646)	4			G. E. 2N4949 Selected		
TR3, 13 and TR2, 6 and TR1, 5 and C9	2N731 2N730 2N722 MC80V102AM R13, 25, 35	Transistor Transistor (or 2N731) Transistor (or 2N2907) Capacitor 1001/100V Timing Resistors	3 3 3 1 do not load			2N2222A check gain " " " Aerovox C 1512 BX102K		



## PARTS LIST &amp; TRACEABILITY RECORD

A2 Ref. Des. - Page 1 of 2

DATE \_\_\_\_\_ PARKO P/N 100266 (NC) CUSTOMER P/N (Ref. 447-0156-001) SHOP ORDER NO. \_\_\_\_\_

CUSTOMER & P.O. NO. \_\_\_\_\_

REF. DES.	P/N	DESCRIPTION	QTY PER UNIT	TOTAL QTY	INSP	S/N	THRU	PARKO P.O. NO.	LOT
TB1	M/F169P59/032	Terminal Board	2						
#24 AWG	Feed thru Wire		2					Weatherford/Vector	
#22 AWG	Feed thru wire		7						
R17	RN60D	Resistor, 511 ohm	1						
R14	RN60D	Resistor, 750 ohm	1						
R13 and R23	RC07	Resistor, 1K	2						
R10	RC07	Resistor, 390 ohm	2						
R44	RC07	Resistor, 5.6K	4						
R1, 11, 12 and R16	RC07	Resistor, 100 ohm	1						
R8, 19, and R22	RC07	Resistor, 39 ohm	3						
R43	RC07	Resistor, 100 ohm	1						
R37	RC07	Resistor, 150 ohm	1						
R30	RC07	Resistor, 47K	1						
R25	RC07	Resistor, 150K	1						
R4, 5, 15, 24, 27, 29, 45	RC07	Resistor, 10K	10 //						
R2, 3, 6, 9, 17, 20, 26, 28, 32, 33, 34, 35, 36, 38, 41 and 46	RC07	Resistor, 1.5K	16						
CR5	LN967B	Diode, Zener, 18.0V	2						
CR8	LN965B	Diode, Zener, 15.0V	1						
CR4	LN746A	Diode, Zener, 3.3V	1						
CR1, 6 and CR7	1N483B	Diode	3					J1N483-1	
CR3	1N914	Diode	1						
A5	100267	9/25/67							





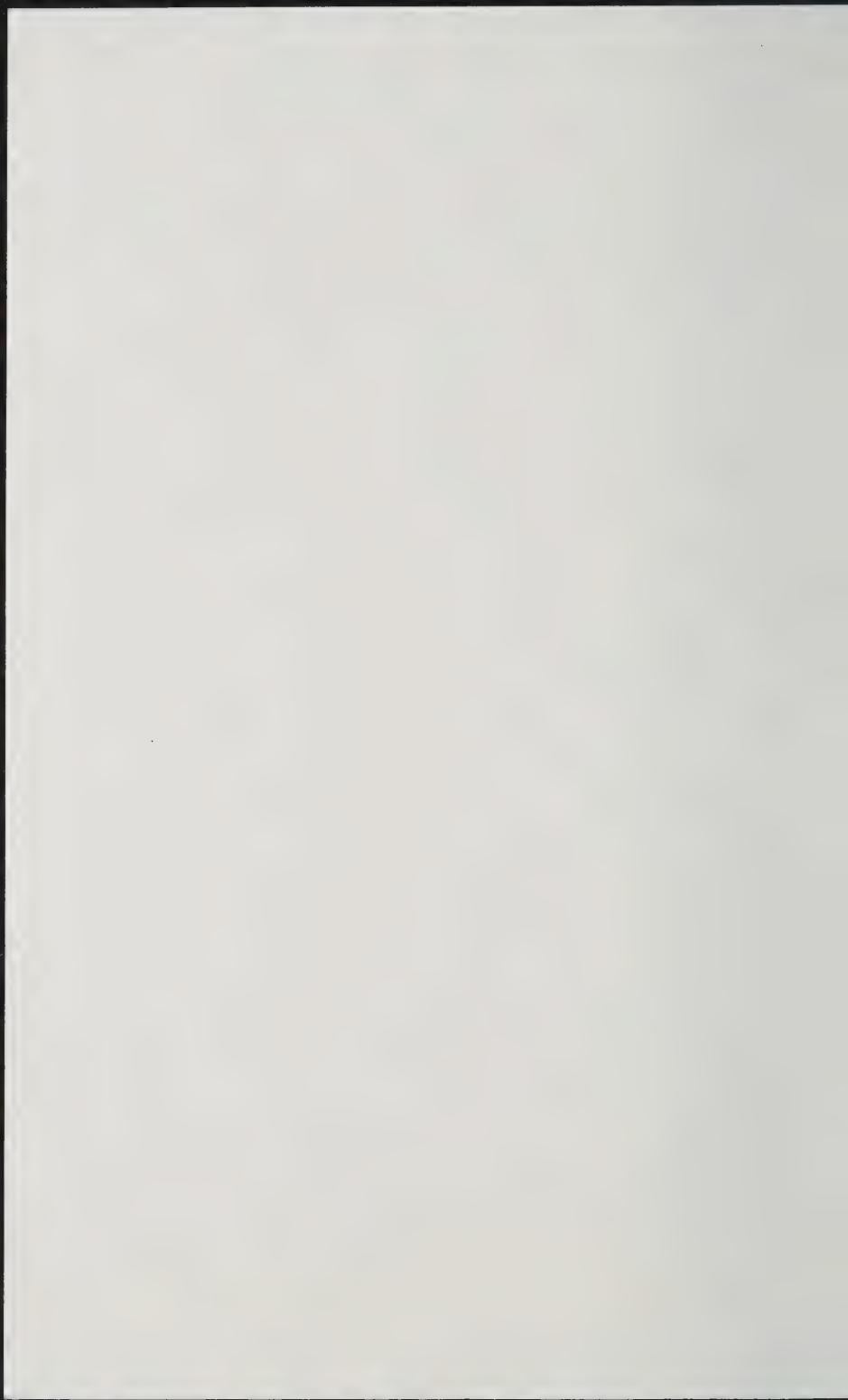


TR7 7/18/00 (5120)

T.C R21 = 353 m

Report

On Tuesday:



100266 - 3-4-92

2N2222A TRANSISTORS SELECTED

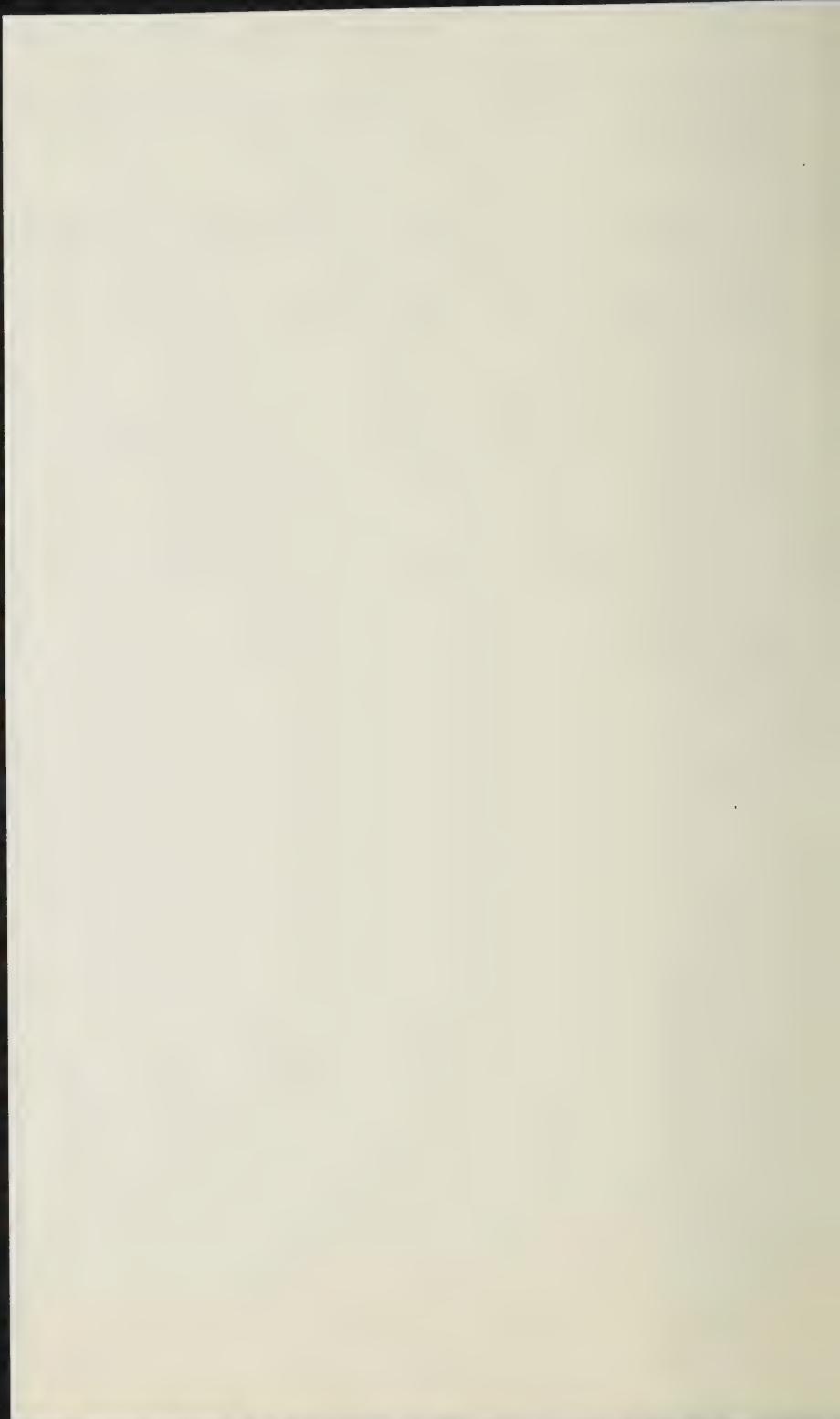
FOR GATE OR  $\approx 225^\circ$

TURN ON TIME = 175ms.

TURN OFF TIME = 300ms.

RISE TIME = 200 ms.

FALL TIME = 200 ms



15<sup>TH</sup> KEYING PULSE - STARTS 15.5 SEC. FROM  
STARTS 15.5 II II  
PULLS RELAY IN  
STARTS 3.5 SEC. TIMER II  
AT END OF 3.5 SEC. TRII SECTION  
AND 6000 VOLTS

EVERY KEYING PULSE STARTS THE 512 MS.  
TIMER - AT THE END OF 512 MS IT TURNS  
ITSELF OFF, AND FOR PULSES TRII AFTER  
3.5 SEC - TRII POWER IS APPLIED AND 85 MS.  
PULSE IS GENERATED.  
ALSO THE TRII POWER IS TURNED ON AND  
TURNS OFF POWER TO TRII.

TE.

RELAY IS TURNED OFF AFTER 15.5 SEC.  
AFTER 15.5 SEC. - TRII SECTION IS TURNED  
DOWN WITH DIRECT KEYING.

### MODE I. SEQUENCE

SET THIS EQUIPMENT PER APPENDIX III.  
- BUT KEYING PULSE GEN. TO A PULSE OF  
2.2 MS AND PRR OF 1 SEC ±  
± 3 ms.

### CLOSE SEC. I -

START KEYING PULSE GENERATOR - AT THE  
FIRST KEYING PULSE THE 85 SEC. AND  
PULLS, AND THE 672 MS CONTIMER WHICH  
STARTS WITH THE KEYING PULSE. AT THE END  
OF THE ~~FOURTH KEYING PULSE~~ 512 MS  
WIDENING THE FOURTH KEYING PULSE THE 85 SEC.  
AND 1 MS PULSE OUTPUTS WILL COME THRU.  
AFTER 21 ST KEYING PULSES THE SEQUENCER

more details as soon as it is possible,  
you know with warmer at the end  
of 150° F.

Planned 100% pure carbon and some  
graphite with some coke  
about 70%  
graphite mixed with 30%  
graphite coke (60%)  
graphite (40%)  
Rough estimate.  
We cannot yet do so.

DIRECT LINE - 500 V RMS  
INJECTION R. - 500 MOE / sec.

TWO POWER SUPPLIES +25V/400MA (D-1)  
-12V/50MA

ONE POWER SUPPLY +1500 ±15V/3MA  
SINUSOID CYCLE  
0.1 TO 1.0 SEC.

COMPUTER RESET PULSE ~12

KEYING PULSE 150 ±15V  
18 TO 25MS, 1.0 S P.R.R.

~~TE-1180 SCOPE - GOOD 4030~~

~~TE-1185 COMPUTER - HP 5316~~

~~TE-1176 METER - FLUKE 8600A DVM~~

~~TE-1122 TYPE 114 TECHNICON PULSE GENERATOR~~

~~BL-117F 33MA #P " "~~

~~TE-1015 - METER - SIMSON 270~~

~~TE-1075 - P.S. - HP-6202B~~

~~TE-1084 - PS - HP-6218A - (2 NEEDED)~~

~~TE-1149 - AR - HYPO T~~

~~TE-1150 - G.R - MEGOMETER~~

  
FREQ 1MHz or 12.31



100266

5-23-70

PRE-TIME A1 - TR4 = 19.5 SEC

A1 - TR10 = 3.5 SEC.

WITH VOLTAGE  
DROPOFF 20%  
A1 - TR12 = 10.5 SEC

A1 - TR9 = 15.5 SEC.

A2 - TR7 = 512 MS. - SELECT  
R18 WITH 60K EX-  
TERNAL RESISTOR 2 -

(25K = 512 MS)

AFTER ASSY = A2 - TR4 = 1MS

A2 - TR15 = 85MS



100266

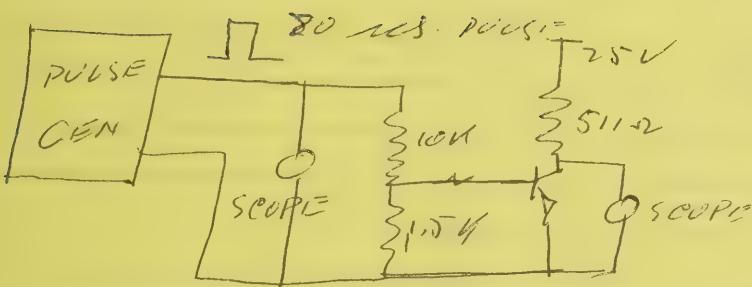
4-11-90

TR26 & TR16 - 2N834.

2N2222A WERE SELECTED AS SUBSTITUTES. 6AIN 2225  
SELECTED FOR LOWEST TURN ON AND TURN OFF TIME.  
AND RISE AND FALL TIME.

2N834 MEASURED:  
TURN ON TIME = 50 ms.  
TURN OFF TIME = 100 ms.  
RISE TIME = 200 ms  
FALL TIME = 200 ms.

2N2222 SELECTED:  
TURN ON TIME = 100 ms.  
TURN OFF TIME = 275 ms.  
RISE TIME = 200 ms.  
FALL TIME = 200 ms.

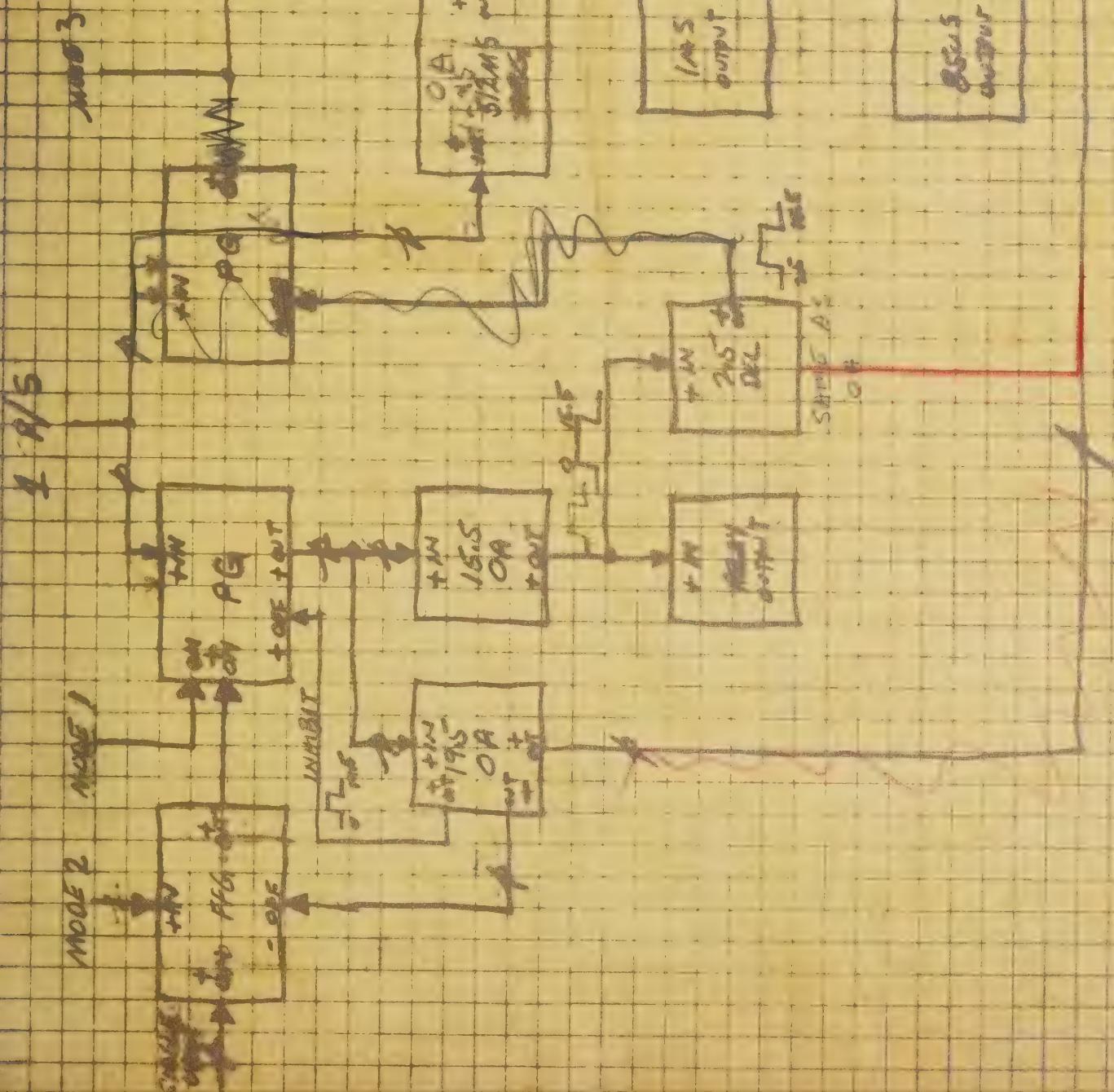


IN645 SELECTED TO SUBSTITUTE IN483B FOR  
LOWEST REVERSE VOLTAGE LEAKAGE



READINGS WERE 20 TO 30 MV ACROSS  
10 MEG = 2 TO 3 mA







+250°C Room

B2-B1  
RESIST.

SENSIT. W/348-2 T.C. w/o o2 T.C.

#1 - 635K - 100 - 514.8 ms (no) — 578.5 ms (45.4)

#2 - 7.55K - 100 — 521.4 ms — 576.6 ms

#3\* - 6.9K - 100 — 526.3 ms (0.8) — 589.2 ms (30.8)

#4 - 7.85K - 100 — 566.5 ms (16.7) — 629.8 ms (38.6)

#5 - 6.45K - 100 — 598.4 ms — 684.2 ms

#6\* - 8.8K - 100 — 544.4 ms (1.4) — 599.3 ms (17.0)

#7 - 5.5K - 100 — 510.2 ms — 582.2 ms

+250°C

①

492.8 ms

507 ms

638ms

517.5 ms

558.4 ms

②

549.8 ms

642.8 ms

712.4 ms

③

543.0 ms

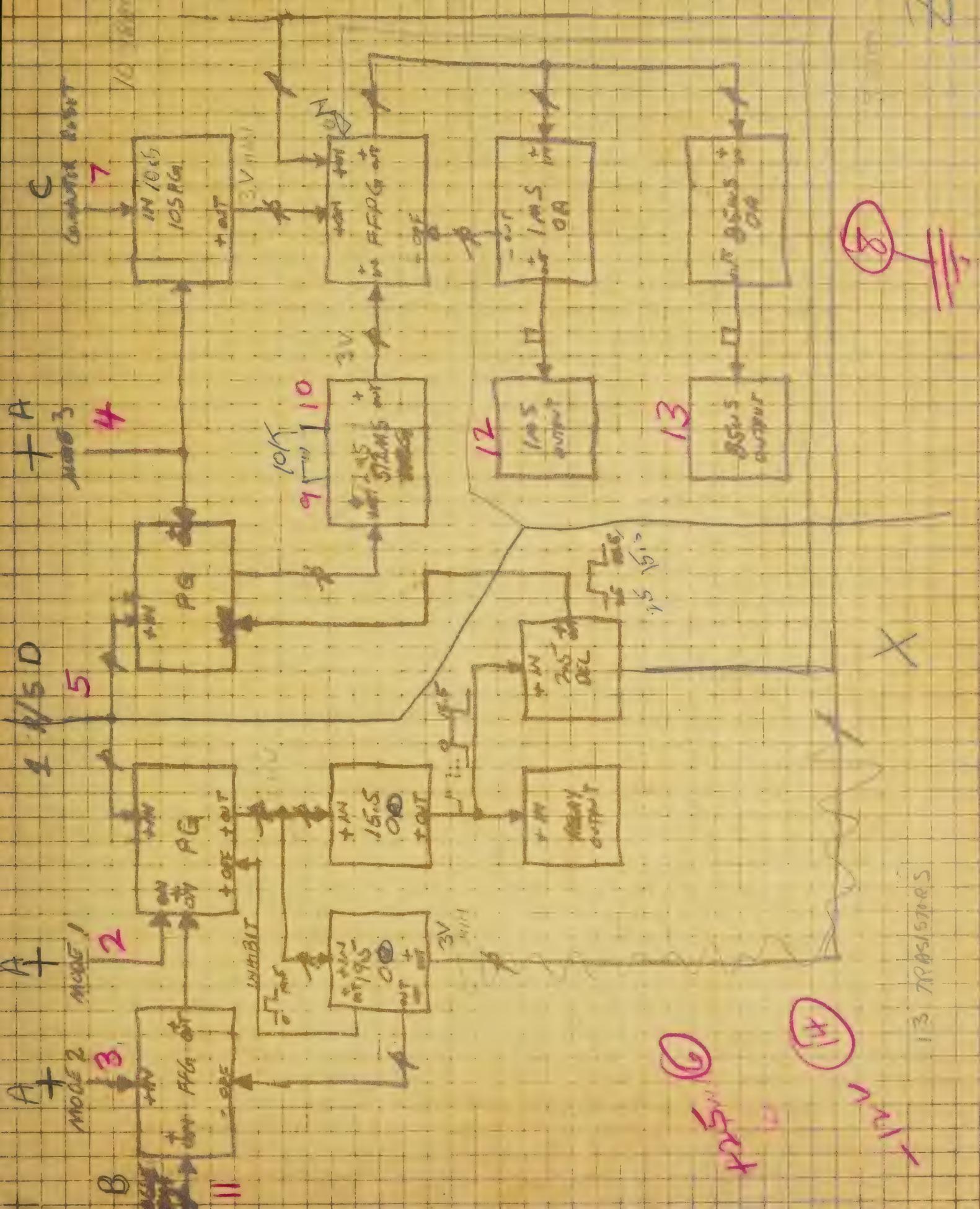
582.3 ms

④

552.7 ms

1.0 PERCENT

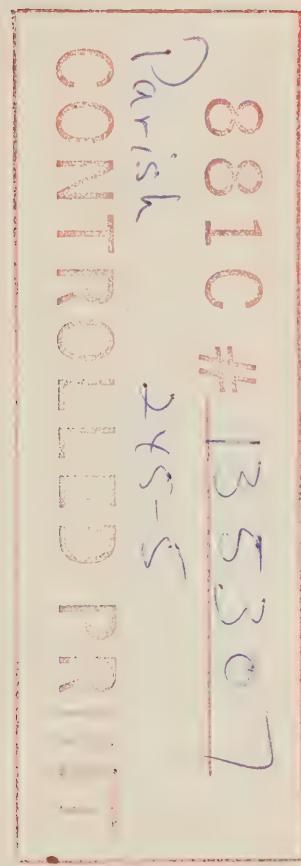




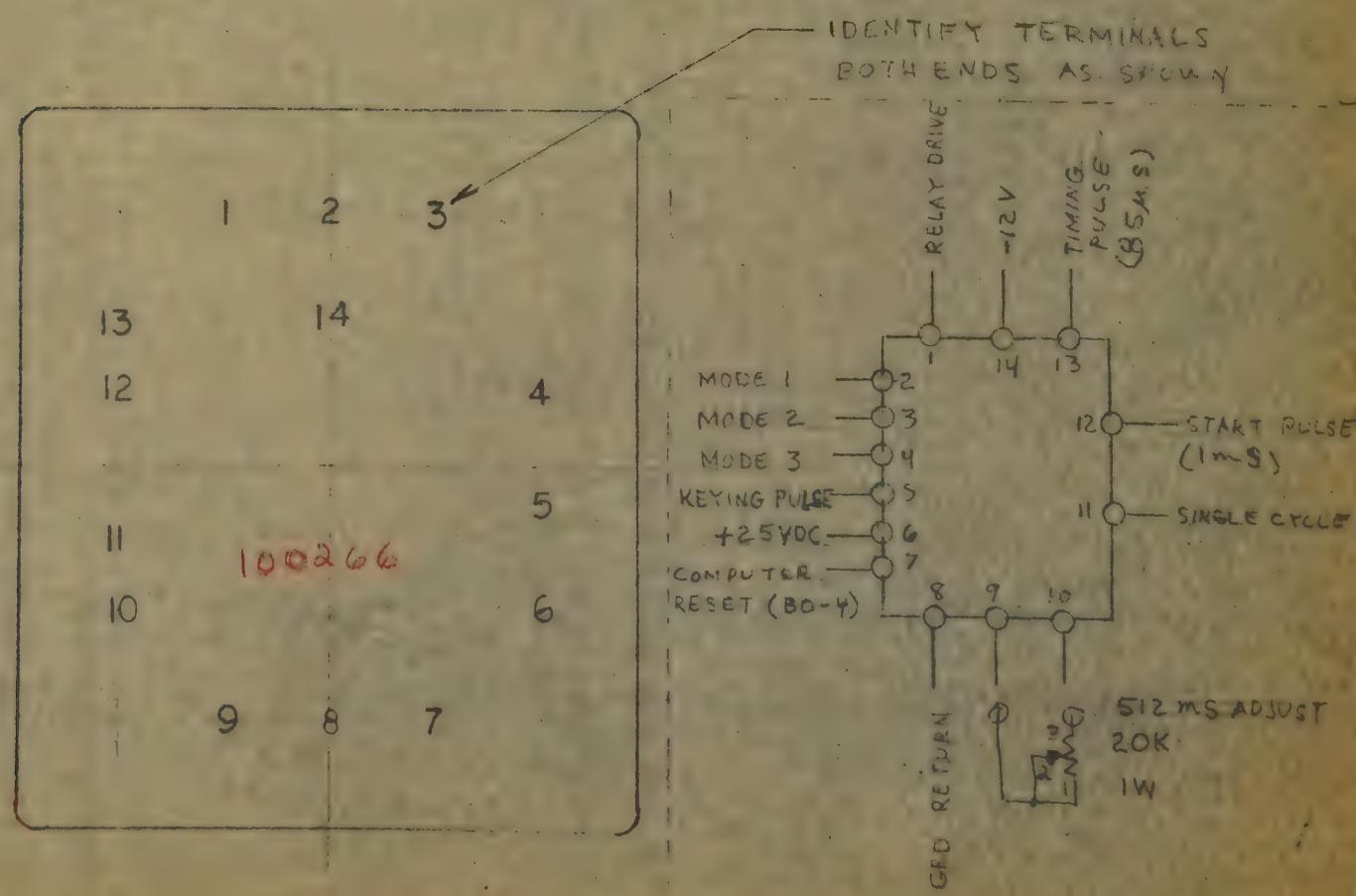
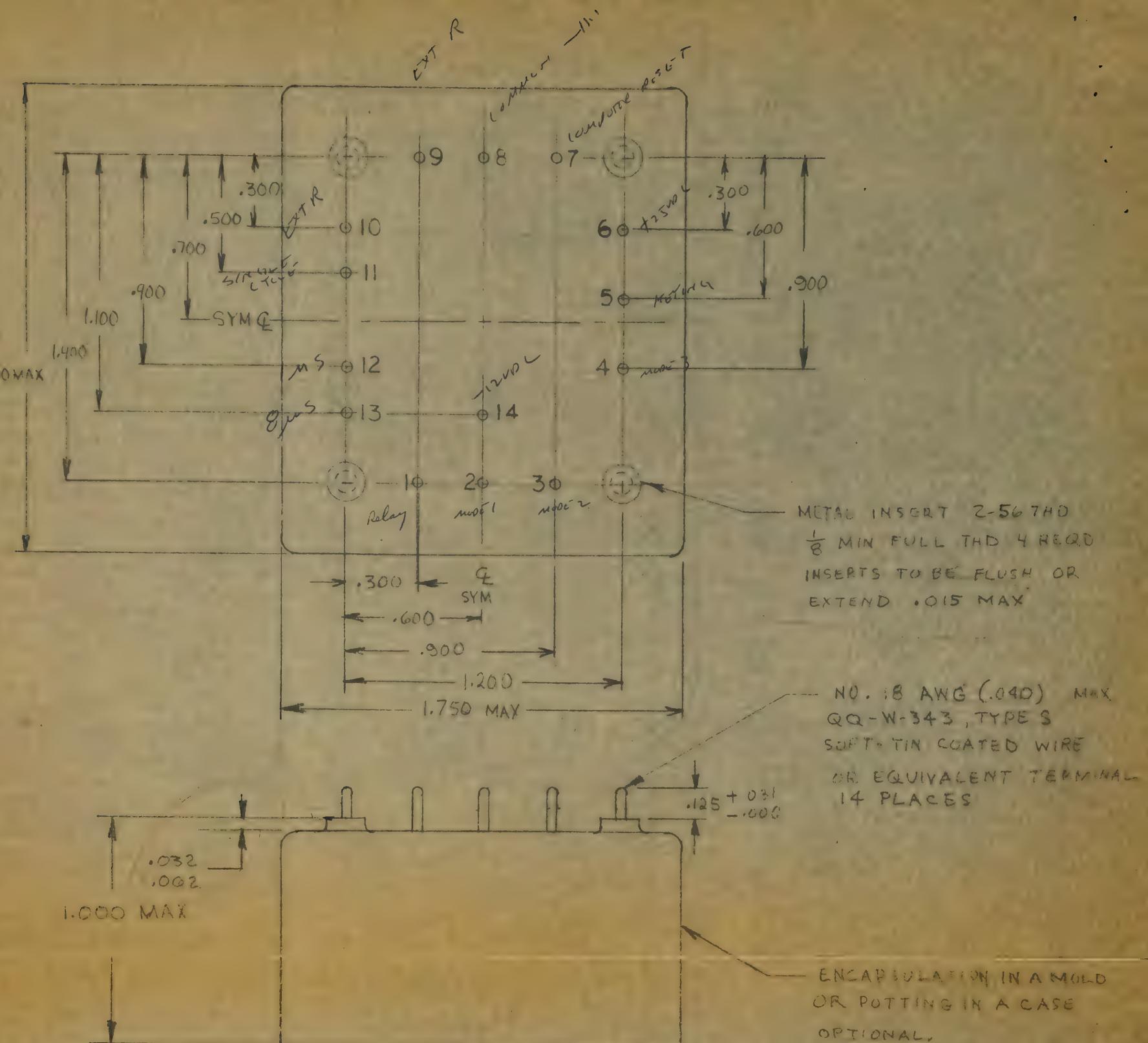


Parish  
Electoral  
Registers

Parish Electoral  
Registers









# Parko

ELECTRONICS COMPANY

## **FUNCTIONAL INSPECTION RECORD**

Date \_\_\_\_\_ Shop Order No. \_\_\_\_\_

**Shop Order No.** \_\_\_\_\_

Parko Part No. \_\_\_\_\_ Customer Part No. \_\_\_\_\_

**Customer Part No.** \_\_\_\_\_

**Customer P.O. No.** \_\_\_\_\_

**Applicable Specifications** \_\_\_\_\_



# Parko

## ELECTRONICS COMPANY

**PKE - FUNCTIONAL INSPECTION RECORD**

Date \_\_\_\_\_ Shop Order No. \_\_\_\_\_

**Shop Order No.**

Parko Part No. \_\_\_\_\_ Customer Part No. \_\_\_\_\_

**Customer Part No.**

**Customer P.O. No.** \_\_\_\_\_

## **Applicable Specifications**



## **FINAL INSPECTION RECORD**

Date \_\_\_\_\_ Shop Order No. \_\_\_\_\_

**Shop Order No.** \_\_\_\_\_

Parko Part No. \_\_\_\_\_ Customer Part No. \_\_\_\_\_

**Customer Part No.** \_\_\_\_\_

**Customer P.O. No.** \_\_\_\_\_

**Applicable Specifications** \_\_\_\_\_



INSTRUMENTAL LETTER  
NAVCET INSTRUCTOR'S COMPUTER

DATE February 24, 1964  
TO Accounts Those Listed FROM J. K. Parish  
ADDRESS D/245-5 B/72 ANA

PHONE 4061

Working Specification for Electronic Equipment - NAVCET

1. Component Title: Network Timing Unit

2. Part No: Parko Electronic #100266

3. System Usage: Contract: NAVCET Instructor's Computer  
No. Req'd: 1 unit per system

4. Function:

The Network Timing Unit, Part No. 100266, is a compactly packaged module which is to be mounted on an etched circuit board. The unit provides electrical interface between tactical equipment and a digital computer and also interface to other tactical equipment.

5. Input Signals:

A. Mode Signals: 1, 2, & 3

False State:  $0 \pm 0.25$  v dc, open circuited or 250 ohms impedance to ground.

True State:  $27.5 \pm 1.0$  v dc, peak-to-peak ripple less than 0.4 volts. Maximum load current shall be less than 200 ma.

Contact Bounce: 2 milliseconds maximum.

B. Single Cycle:

False State:  $0 \pm 0.5$  v including peak-to-peak noise, open circuited impedance greater than 1 megohm.

True State:  $+150 \pm 15$  v dc, peak-to-peak ripple less than 1.0 volt. Maximum load current shall be less than 10 ma.

Pulse Width: 0.1 to 1.0 seconds

Contact Bounce: 2 milliseconds maximum.

C. Computer Reset:

False State:  $-0.25 \pm 0.25$  v dc, source impedance of 470 ohms  $\pm 10\%$ . Maximum load current shall be less than 2 ma.



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True State:  $-12 \pm 2.0$  v dc, source impedance of 450 ohms  $\pm 10\%$ .  
Maximum load current shall be less than 2 ma.

Pulse Width: 2.4 to 10.1 milliseconds. Rise and fall times less than 1 microsecond.

D. Keying Pulse:

False State:  $0 \pm 0.5$  v including peak-to-peak noise, open circuited  
impedance greater than 1 megohm.

True State:  $+150 \pm 15$  v dc, source impedance during Mode 1 and Mode 2  
conditions shall be 470 ohm  $\pm 10\%$ . Source impedance during  
Mode 3 shall be an 0.5 henry  $\pm 10\%$  choke in series with an  
8.2K  $\pm 10\%$  resistor. The choke has an arc suppression  
diode in parallel with the coil.

Pulse Width: 18 to 25 milliseconds

Pulse Repetition Rate:  $1 \pm 0.05$  cps

Contact Bounce: Less than 2 milliseconds

6. Output Signals:

A. Relay Drive

False State: Open circuited, leakage current less than 0.25 ma at  
 $+28$  v dc.

True State: Short circuit, voltage drop less than 0.8 v dc at 60 ma  
maximum load current.

B. 1 Millisecond Pulse

False State:  $-12 \pm 0.5$  v dc, source impedance less than 4K ohms

True State:  $+2.5 \pm 0.5$  v dc, source impedance less than 1K ohms

Pulse Width:  $1.0 \pm 0.12$  milliseconds

Rise and fall time: less than 1.5 microseconds

C. 85 Microsecond Timing Pulse

False State:  $-1$  to  $+6$  v dc, source impedance less than 1K ohm

True State:  $-11$  to  $-20$  v dc, source impedance less than 400 ohm

Pulse Width:  $85 \pm 15$  microseconds

Rise and fall time: less than 1.0 microsecond



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7. Operational Requirements

Mode lines 1, 2, and 3 define the three basic operating modes of the unit. Only one mode line is true at any time.

A. If Mode 1 is true:

- (a) With the occurrence of the first keying pulse, switch the Relay Drive Output from false to true.
- (b) On the leading edge (-0, +50 us) of the fourth keying pulse, count the pulse of Part A (a) as number 1, start a 512.5 ms timer. At the end of the 512.5 ms period, the 1 ms and 85 us timing pulse outputs shall come true for their respective pulse width.
- (c) At the same time the 512.5 ms timer is started, start a  $12.5 \pm 1.0$  sec timer. At the end of the 12.5 sec time period, switch the Relay Drive output line to the false state.  $\rightarrow 15.5$
- (d)  $19.5 \pm 1.5$  sec after the leading edge of the first keying pulse, return to the beginning of the program and test the three mode lines to determine the proper mode for the next operating sequence.

B. If Mode 2 is true:

- (a) Test the Single Cycle input line for a true state.
- (b) When this line comes true, proceed to Part A (a) of Mode 1. All additional steps of Mode 2 are identical to Mode 1.

C. If Mode 3 is true:

- (a) On the leading edge (-0, +50 us) of the first keying pulse, start the 512.5 ms timer. At the end of the 512.5 ms period, the 1 ms and 85 us timing pulse outputs shall come true for their respective pulse width.
- (b) Wait until the Computer Reset line comes true, then return to the beginning of the program and test the three mode lines to determine the proper mode for the next operating sequence.
- (c) If the Computer Reset line does not come true within  $10 \pm 1$  sec after the first keying pulse, then return to the beginning of the program.

NOTE

If the Computer Reset line comes true less than 1 sec after the 1 ms timing pulse is true, the sequence of the unit shall operate the 1 ms and 85 us pulses at a 1 sec rate as defined by step C (a).



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8. 512.5 ms Timer Characteristics

The 512.5 ms timer shall have provisions for system adjustment to within 0.5 ms of the correct timing. This adjustable resistor will be packaged by Autonetics adjacent to the Network Timing Unit module.

9. Power Supply Requirements

+25 v dc  $\pm$  2%, 200 ma <sup>MAX</sup> minimum current capability, with peak-to-peak ripple less than 50 mv. Source impedance less than 1 ohm.

10. Environmental Conditions

Operating temperature: 15 to 45°C

Storage temperature range: -10 to 75°C

11. Packaging

The Network Timing Unit shall be a hermetically sealed unit designed for mounting on an etched circuit board. The unit shall be secured in place by at least two inserts. The pin layout shall be designed so that the unit cannot be mounted incorrectly. Feet with a minimum height of 0.06 inches shall be located on the bottom of the package. The maximum height of the unit, including feet, shall be less than 31/32 of an inch. The volume of the unit shall be less than four square inches.

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T. T. Ota do.

W. W. Sloan

E. L. Bailey

J. T. Azama

D. S. Johnson D/246-6 B/231 ANA

215.2 as Part Circularisation .8

ability of the system to move from one position to another is due to the fact that the system has been designed to have two positions of the system which are the stable and unstable positions. The system is able to move from one position to another by applying a small force.

Power Supply Isolation .9

The power supply is connected to the system through a transformer. The primary winding of the transformer is connected to a 220V AC source. The secondary winding is connected to the system. The output voltage is approximately 12V DC.

Environmental Control .10

The system is controlled by a microcontroller. The microcontroller is programmed to control the temperature of the system. The temperature range is -10 to 70°C.

Conclusion .11

The system has been designed to have two positions of the system which are the stable and unstable positions. The system is able to move from one position to another by applying a small force. The system is controlled by a microcontroller. The temperature range is -10 to 70°C.

  
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